USSR

DEMENT, Ye.

"The Use and Storage of Dosimetric Instruments"

Moscow, Voyennyye Znaniya, No 5, 1972, pp 23-24

Abstract: Improper use and storage of equipment used in secondary schools in radiation hazard survey classes results in breakage and malfunction of complicated instruments. Only careful attention to instructions, including those listed below, will insure their long life. Mechanical damage caused by jolts, blows and falls, forcing of knobs and switches, and sharp bending of connecting cables of the probe should be avoided. Terminal blocks and two-pin plugs should not be pulled out by the connecting cord. Dosimetric instruments must be properly oiled, protected from the elements during outdoor use, and carefully packaged for transporting. Frequent failure of the electrical circuitry occurs due to lack of understanding of the instrument's mechanism. The instrument's main disconnect switch should be turned off before it is connected to the source of the power supply, all control knobs should be in their proper position, and polarity strictly observed. Instruments should be stored in containers in a heated storage room at constant temperature and relative humidity, with no corrosive chemicals present in the room, and with only a limited number

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DEMENT, Ye., Voyennyye Znaniya, No 5, 1972, pp 23-24

of authorized persons allowed to enter it. At the end of the academic year
the instruments must be checked for efficiency, carefully cleaned and oiled,
and the primary galvanic cells and batteries disconnected. All control
radioactive preparations are to be stored separately from the instruments.

2/2

TITLE--QUASI ELASTIC SCATTERING OF HIGH ENERGY ELECTRONS ON NUCLEONS OF
CARBON 12 AND SILICON 28 -U-

AUTHOR-(05)-DEMENTIY, S.V., AFANASYEV, N.G., ARKATOV, I.M., VLASENKO,
V.G., GOLDSHTEYN, V.A.--

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(1), 19-28

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON SCATTERING, INELASTIC SCATTERING, CARBON ISOTOPE,
SILICON ISOTOPE, CHERENKOV SCATTERING, HIGH ENERGY PARTICLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0175   STEP NO--UR/0367/70/011/001/0019/0028

CIRC ACCESSION NO--AP0048467
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0048467

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS OF THE MEASUREMENTS OF
THE INELASTIC SCATTERING OF 690-, 970-, AND 1115-MEV E ON PRIME12 C AND
PRIME28 SI NUCLEI AT 16-40DEGREES ARE PRESENTED. THE SCATTERED E WERE
DETECTED BY MEANS OF CHERENKOV COUNTER, THE CONSTRUCTION OF WHICH IS
DESCRIBED. NO CORRECTION FOR THE INFLUENCE OF PRIME13 C AND PRIME29,30
SI CONTENT IN THE TARGETS OF NATURAL C (4.97 TIMES 10 PRIME22 NUCLEI-CM
PRIME2) AND OF NATURAL SI (1.51 TIMES 10 PRIME12 NUCLEI-CM PRIME2) UPON
THE CROSS SECTIONS VALUES WAS MADE BECAUSE OF THEIR LITTLE INFLUENCE.
THE GAINED RESULTS WERE ANALYZED BY USING THE THEORY OF THE QUASI
ELASTIC SCATTERING. IN ORDER TO MAKE THE PRESENT RESULTS COMPATIBLE
WITH THE ELASTIC E SCATTERING ON THE SAME NUCLEI, IT IS NECESSARY TO
ACCOUNT FOR INEQUALITY OF POTENTIALS IN DIFFERENT NUCLEAR SHELLS AS WELL
AS THE DYNAMICAL CORRELATIONS OF N IN NUCLEI.   FACILITY:
FIZ.-TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

CIRC ACCESSION NO--AP0136146

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEFORMATION VS. TEMP. CURVES
HERE OBTAIN UNDER CONST. STRESSES FOR LOW D. (SIMILAR TO 0.05 G-CM
PRIME3) FOAMED POLYURETHANE OR SEMIRIGID POLY(VINYL CHLORIDE). IT WAS
NOT POSSIBLE TO DET. THE GLASS POINT (T SUBG) OR THE SOFTENING POINT (T
SUBS) OF THESE FOAMS. THE ALTERNATIVE DILATOMETRIC METHOD MAY BE USED
FOR T SUBG AND T SUBS DETN. OF THE LIGHT OPEN CELL FOAMS, BUT NOT OF THE
CLOSED CELL FOAMS. THE THERMAL STABILITY OF THESE FOAMS CANNOT BE
JUDGED FROM THE DEFORMATION VS. TEMP. CURVES.

UNCLASSIFIED

1/2   018   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--EFFECT OF WATER ON THE MOLE STABILITY O. RIGID POLYURETHANE FOAMS
-U-
AUTHOR-(03)-DEMENTYEV, A.G., NEVSKIY, L.V., TARAKONOV, O.G.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (2), 51-2

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POLYURETHANE RESIN, FOAM PLASTIC, FREON, CARBON DIOXIDE,
  POROSITY, PLASTIC FABRICATION/(U)PPU3 POLYURETHANE RESIN, (U)PPU3S
  POLYURETHANE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0675   STEP NO--UR/0191/70/000/002/0051/0052

CIRC ACCESSION NO--AP0119583
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0119583
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE EFFECTS OF H SUB2 O ON THE
  SHPAE. STABILITY OF RIGID POLYURETHANE FOAMS (PPU-3 (I) AND PPU-3S (II))
  BLOWN WITH FREON-11 OR CO SUB2 WERE STUDIED.   INITIALLY, H SUB2 O WAS
  ABSORBED AT THE SAME RATE BY BOTH I AND II.   THE SOFTENING TEMP. OF II
  DECREASED BY 47DEGREES FOLLOWING ITS PLASTICIZATION WITH H SUB2 O DURING
  5 DAYS. THE 2ND STAGE OF H SUB2 O ABSORPTION IN I OCCURRED AT A SLOWER
  RATE. THE SHAPE STABILITY OF I AND II WAS PROPORTIONAL TO THEIR
  RIGIDITY. THE EFFECTS OF POROSITY AND OF THE FOAMING GAS ON THE SHAPE
  STABILITY OF I AND II WERE DISCUSSED.

UNCLASSIFIED

USSR

DEMENT'YEV, A. M., et al, <u>Vibratsionno-chastotn. preobrazovateli.</u>
<u>Ch. 2</u>, "Energiya", 1970, pp 36-42

operation of flowmeters based on vibration-frequency pickups in
automatic measurement systems with computers. Three illustrations,
Bibliography of one title.

2/2

BULATOV, V. P., VEDENEYEV, V. I., GERSHENZON, YU. M., DEMENT'YEV, A. P., and SARKISOV, O. M., Institute of Chemical Physics, Academy of Sciences USSR

"The Non-Linear Mechanism of Spontaneous Combustion in the Reaction Between Fluorine and Deuterium"

Abstract: Previously it had been determined from the isothermal spontaneous combustion of phosphorus in fluorine that the vibrationally-excited deuterium molecules bring about branching in this reaction. In this study, the influence of the external initiation of active centers in the limit of the spontaneous combustion reaction between fluorine and deuterium is determined. The reaction mixture was composed of $O_2:D_2:F_2$ in the ratio of 5.5:1:1 at a pressure of 1 torr. A plot of the rate of radical accumulation as a function of temperature shows an abrupt change at $T = 590°K$. Increasing in reaction time 2.7-fold did not significantly change the disruption temperature. The value of T decreased with increasing partial pressure of fluorine at a constant total pressure, and also with an increase in the total pressure, and increased on addition of small amounts of CO_2. Previously it had been shown that the

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USSR

contributions of the nonlinear phases are essentially related to the experimental conditions determining the competition of the rates of branching according to the following paths -- (1) $D_2(v = 1) + F_2 = D + DF + F$; and (2) $D_2 (v > 1) + F_2 = D + DF + F$ -- by the ratio of the constants $k_2/k_1 \approx \exp 9000/RT$ and that of $[D_2]$ $(v > 1)/ [D_2]$ $(v = 1)$. It was concluded that the lower limit of spontaneous combustion $F_2 + D_2$ is related to the rate of production of active centers. The expansion of the region in which this reaction occurs on external initiation confirms the nonlinear mechanism of branching presented above.

2/2

USSR   UDC 576.858.6:616.155.392

BARINSKIY, I. F., SHUBLADZE, A. K., BOCHAROV, A. F., FILATOV, E. P., and
DEMENT'YEV, I. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of
Medical Sciences USSR, Moscow

"Leukocytic Virus of Human Leukemia"

Abstract: Three virus strains were isolated from donor cultures obtained from
leukemia patients. The strains were not stable and decomposed on treatment
with ether or after thermo-inactivation at 60°C for 30 minutes. They were
apathogenic with respect to test animals (rabbits, adult mice, rats, guinea
pigs) and chick embryos. They did not exhibit pronounced cytopathic activity
in lung tissue and similar cultures. The leukocytic leukemia virus was found
to have a density of 1.184 g/cm^3, which corresponds to the densities of known
leukosis viruses of mice and birds. Electron-microscopic studies established
the existence of typical leukemia particles with the characteristic morphology.

1/1

USSR   UDC. 539.4

ZUBAREV, P. V., DEMENT'YEV, L. N., Moscow

"Influence of Type of Loading on High-Temperature Creep of Zirconium Carbide"

Kiev, Problemy Prochnosti, No 8, Aug 73, pp 61-64.

Abstract: The influence of the type of loading on creep of fine-grained zirconium carbide $ZrC_{0.940}O_{0.005}N_{0.003}$ at temperatures of 2150-2630° C and stresses of 0.2-2.0 kg/mm^2 is studied. It is demonstrated that during extension, compression and bending, the creep curves agree with each other satisfactorily, with the exception of the section of accelerated creep. It is established that the form of loading has no influence on the mechanism of creep. It is assumed that creep is controlled by diffusion processes along grain boundaries.

1/1

USSR   UDC 669.01.29.82.8+539.376.219

ZUBAREV, P. V., and DEMENT'YEV, L. N., Moscow

"The Relationship Between the Activation Energy of High-Temperature Creep and the Diffusion in Carbides of Transition Metals"

Kiyev, Problemy Prochnosti, No. 9, Sep 71, pp 47—51

Abstract : The creep rates and values of the creep activation energy for $ZrC_{0.92}$ and $ZrC_{0.97}$ have been determined for temperatures higher than 0.5 of the fusing temperature. Based on the analysis of published creep and diffusion data in inclusion phases, it is demonstrated that the creep activation energy of metals of the fourth group of the Periodic System and monocompounds of uranium, that is, of materials with a high binding energy Me – C , can be equal both, to the diffusion activation energy of the metal and the carbon activation energy in carbides. In carbides of metals of the fifth group of the Periodic System of stoichiometric composition, where the binding energy Me – Me increases, the creep activation energy is equal to the diffusion activation energy of the metal in carbide. Three illustr., one table, 33 biblio. refs.
1/1

DEMENTYEV N.A.

AN0111977

UR 9059

TITLE--   /CAPTION/

NEWSPAPER-- VYSHKA, MARCH 27, 1970, P 2, COLS 5-7

ABSTRACT--   NIKOLAY ANTONOVICH DEMENT,YEV, ENGINEER TEAM LEADER,
AND ROLAND TRAUTS, JOURNEYMAN, ARE SHOWN AT A BASE ELECTRIC-RADIO-
NAVIGATION SHOP, "KASPARA". THE SHOP REPAIRS MARINE RADARS, GYRO-
SCOPES, SONARS, AND LOCATION FINDERS.

19920791

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USSR

UDC 51

DEMENT'YEV, N. P.

"Switching Points for a Bilinear Problem of Optimal Control"

Translation: This paper is an analysis of a multibranch economic model described
by a system of differential equations.

1/1

FREE RADICALS IN HARDING-PASSY MELANOMA AFTER IRRADIATION BY AN UNFOCUSSED
LASER BEAM

UDC: 577.391

[Article by L. A. Piruzyan, L. Kh. Eidus, G. S. Svyerbenkova, V. A. Dementyev,
and G. S. Svyerbenkova; Moscow, Izvestiya Akademii Nauk SSSR,
Seriya Biologicheskaya, Russian, No 1, 1968, pp 121-125]

Lasers are now finding wide application in biology and
medicine (Piruzyan et al, 1965). The effect of a laser beam
on a biological structure leads to temperature drops inside it
which can affect physicochemical processes. In addition, when
the energy densities are great, large temperature gradients
form which can lead to disorder of the biological structure.

In experiments on various types of transplanted tumors
it has been shown that at high energies laser radiation has an
oncological effect (Ketcham and Minton, 1965; Fine et al, 1963;
Minton and Ketcham, 1964).

It is known that physical factors such as gamma-radia-
tion, ultraviolet and x-rays affect the concentration of free
radicals in tissues.

Relatively recently Derr et al observed increase of the
free-radical concentration in specimens of melanoma after ir-
radiation with a focussed beam of a ruby laser at a dose of 100
joules as compared with unirradiated melanoma (Derr and Klein,
1964; Derr et al, 1965). Since the precision of determination
was 50%, the authors considered those results preliminary.

Cases of the application of an unfocussed beam have been
described. It was of interest to clarify the effect of an un-
focussed laser beam on tumorous tissue irradiated once.

- 1 -

Dementyev, V.A.

JPRS 57728

8 Jan 73

UDC: 616.—

ELECTRON MICROSCOPIC INVESTIGATION OF THE HARDING-PASSY MELANOMA UNDER
THE EFFECT OF LASER RADIATION

[Article by L. A. Piruzyan, V. V. Dementyev, G. V. Ponomarev,
Morisalova, and V. A. Dementyev; Moscow, Izvestiya Akademii
Nauk SSSR, Seriya Biologicheskaya, Russian, No 3, 1970, pp
466]

The article examines the effect of laser radiation
on the ultrastructure of the Harding-Passy melanoma.
It has been established that irreversible changes
occurred in the zones not directly irradiated. The
worst damaged organelles of a Harding-Passy melanoma
cell were the mitochondria, whereas the myelin struc-
tures, the nucleus and the nucleoli, as well as the
virus-like formations, revealed no morphological chan-
ges. Strong vacuolization was noted in the cell cyto-
plasm. A diagram of temperature changes from the cen-
ter of the laser lesion is presented. The disorders
which occurred in the melanoma cell under the effect
of the laser are explained as the effect of the ther-
mechanical factor.

The creation of lasers has permitted biophysicists to
begin investigations connected with the effect of pot-rful
luminous fluxes on biological objects. The literature contains
information about the histological changes of malignant tumors
(melanomas) after irradiation by a laser (Piruzyan et al.,
and also on the free-radical content in an irradiated melanoma
(Piruzyan et al., 1968). Therefore it is of interest to exp...
affections in a tumor on the ultrastructural level.

In the present work a Harding-Passy melanoma was sub...
to laser irradiation in order to investigate the electron

USSR   UDC: 535.14

DEMENT'YEV, V. A. and ZUBAREV, T. N.

"Crammed Operation in Single-Mode Quantum Lasers"

Moscow, Doklady Akademii Nauk SSSR, vol 204, No 1,   1 May   1972,
pp 66-69

Abstract: Interest has been aroused in the analysis of single-
mode laser operation in connection with the publication of ex-
perimental data indicating that the condition known as "crammed"
operation, an unstable state, may arise. So far, these experi-
mental results have been given no theoretical explanation, an
omission this article sets out to rectify by analyzing the single-
mode equations of laser operation. Consisting of a system of
three, these equations are given in terms of the field, the po-
larization, the inverse population of the material,   the para-
meter characterizing the pumping power, the effective density,
and the frequency and dipole moment of the transition between
the operating levels of the active luminescence centers. It is
shown that crammed operation may not be connected with instabi-
lities in the monochromatic laser mode for small disturbances.
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- 11 -

UDC: 616.006

USSR

PIRUZYAN, L.A., ROGOVIN, V.V., ROMANOV, G.V., MERTSALOVA, L.V., and DEMENT'YEV, V.A., Institute of Chemical Physics, Academy of Sciences, USSR

"Electron Microscope Study of Harding-Passy Melanoma Under the Influence of Lasers"

Abstract: The effect of laser irradiation on the ultrastructure of Harding-Passy melanoma was studied. It was found that the zones which had not been irradiated directly contained irreversible changes. Mitochondria were most damaged, and their organization disrupted, whereas the myelin structures, nucleus and nucleoli, and virus-like formations showed no morphological changes. A strong vacuolization in the cytoplasm of the cells was noted. Temperature changes in melanoma tissue are proportional to the distance from the center of laser action. All changes in melanoma tissues under the action of lasers are explained on the basis of the thermomechanical effect.

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1/2   039   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--ELECTRONMICROSCOPICAL INVESTIGATION OF THE GARDING PASSY MELANOME
   UNDER THE INFLUENCE OF A QUANTUM GENERATOR -U-
AUTHOR-(05)-PIRUZYAN, L.A., ROGOVIN, V.V., ROMANOV, G.V., MERTSALOVA,
   L.V., DEMENTYEV, V.A.
COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3,
   PP 463-467
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, PHYSICS

TOPIC TAGS--LASER RADIATION, ELECTRON MICROSCOPE, TUMOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1176   STEP NO--UR/0216/70/0C0/003/0463/0467

CIRC ACCESSION NO--AP0126778
                           UNCLASSIFIED

CIRC ACCESSICN NO--AP0126778

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE EFFECT OF LASER IRRADIATION ON
THE GARDING PASSY MELANOMA ULTRASTRUCTURE IS DISCUSSED. IT WAS FOUND
THAT THE ZONES WHICH HAD NOT BEEN DIRECTLY ILLUMINATED CONTAINED
IRREVERSIBLE CHANGES. AMONG THE ORGANELLES OF A GARDING PASSY MELANOMA
CELL THE MITOCHONDRIA APPEARED TO BE MOST DAMAGED WHEREAS THE MYELIN
STRUCTURES THE NUCLEUS AND THE NUCLEOLI AS WELL AS VIRUS LIKE FORMATIONS
REVEALED NO MORPHOLOGICAL CHANGES. STRONG VACUOLIZATION OF THE CELL
CYTOPLASM WAS STATED. A DIAGRAM OF THE TEMPERATURE CHANGES IN THE
MELANOME TISSUE RELATIVE TO THE DISTANCE OF THE EPICENTER OF THE LASER
LESION IS SHOWN. THE LESIONS CAUSED IN THE MELANOME CELL UNDER LASER
ACTION ARE EXPLAINED ON THE BASIS OF THE EFFECT OF THE THERMOMECHANICAL
FACTOR.   FACILITY: INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF
SCIENCES, USSR.

UNCLASSIFIED

USSR   UDC 591.1.05

PIRUZYAN, L. A., GLEZER, V. M., DEMENT'YEV, V. A., LOMONOSOV, V. A. and
CHIBRIKIN, V. M., Institute of Chemical Physics, Academy of Sciences USSR

"The Mechanism of the Biological Effect of Permanent Magnetic Fields"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1970,
pp 535-539

Abstract: This review of the Soviet and foreign literature on the biological
effect of magnetic fields discusses the effects of a permanent magnetic field on
the electrical properties of axons, the rate of chemical reactions associated
with free radicals in nervous tissue, the effects produced by impairment of
spatial orientation of biomolecules, and conformational changes in protein
mitochondria. The effects of a permanent magnetic field on electrolytes, water,
and currents circulating in living systems are treated at some length.

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USSR   UDC 539.192

DEMENT'YEV, V. A., KONDRATOV, O. I., GRIBOV, L. A., (Dept, of Physics) KASHKAN, L. I., (Belorussian State University)

"Program for Solving the Problems of Multiatomic Molecule Oscillation Modes on 'Minsk-22' Computer"

Abstract: The algorithm and the program for solving the direct spectral problem of the theory of oscillatory spectra of multi-atomic molecules (up to 27 atoms) on the "Minsk-22" electronic computer are described in detail. The program consists of four logically independent sections; 1) the formation of matrices (up to 81st order) of molecule kinetci T_p and potential U_q energy in the natural and symmetry coordinates; 2) the determination of oscillation frequencies and modes in natural and symmetry coordinates with automatic search and elimination of dependent coordinates; 3) the reduction of the oscillatory mode in natural coordinates to zero amplitudes of normal oscillatory modes; 4) determination of atoms displacement corresponding to zero amplitudes of normal

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USSR

DEMENT'YEV, V. A., et al., Moscow, Izvestiya Timirayzevskoy Sel'-
skokozyaystvennoy Akademii, No 2, 1970, pp 203-214

oscillatory modes. An example of the preparation and recording
of the initial data for determining the oscillatory mode of a
multiatomic molecule of ethane (C_2H_6) is presented. Original article
has two figures, ten formulas and three tables.

2/2

USSR

UDC 66.074.7:546.65

BREZHNEVA, N. Ye., DEMENT'YEV, V. D., KAPSHANINOV, Yu. I., and POPOV, I. B.

"A Study of Ion Exchange Between Ceolites and Radioactive Rare Earth Elements"

Leningrad, Radiokhimiya, Vol XIII, No 3, 1971, pp 411-416

Abstract: Synthetic zeolites, which have greater radiation-chemical and thermal resistance than organic resins, are of particular interest in connection with their use in various areas of radiochemistry, especially their application in the sorption decontamination of radioactive waste, in the extraction of radioisotopes to concentrate them before burial, and in obtaining radiation sources. However, in regard to ion-exchange, no one has been able to secure substitution of the zeolite Na^+ and Ca^{2+} ions with the ions of a metal having a valence greater than 1 or 2, with the exception of the 27% exchange for A-type zeolite, and 60% exchange for X-type zeolite, achieved at the disadvantage of increase in the amorphous phase (trivalent cerium was the substitute ion). In the present study, previously dehydrated zeolite was used in conjunction with a complexing agent, on the assumption that the rare-earth ions would form with the agent adsorbed on the zeolite
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USSR

BREZHNEVA, N. Ye.; et al., Radiokhimiya, Vol XIII, No 3, 1971, pp 411-416

just the same complexes as in a solution, while the complexes themselves, MeA^+ and MeA^{2+}, would behave as mono- and bivalent ions, and thus be capable of exchanges without the formation of a polar structure.

It is shown that maximum exchange capacity of NaX-type zeolites, for all elements studied, was the same (0.360 mg-equiv per 100 mg zeolite), and that the degree of substitution of Na ions was 82%. The following array of selectivity was found to be present: $La^{3+} > Ce^{3+} > Pr^{3+} > Nd^{3+} > Pm^{3+} > Sm^{3+}$; this holds up to about the level of 80% exchange, after which the order of selectivity is reversed. It was shown, further, that degree of exchange is quite independent of the concentration of the initial rare-earth element solution, at least within the range of solutions from 0.01 to 1 N. Finally, it was shown that the mobility of rare-earth ions in a zeolite is lower than that of sodium ions.

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BREZHNEVA, N. YE., DEMENT'YEV, V. D., KAPSHANINOV, YU. I., and POPOV, I. B.

"Ion Exchange Kinetics of Rare Earth Elements on NaX Zeolite"

Abstract: Ion exchange kinetics of La^{3+}, Ce^{3+}, Pr^{3+}, Nd^{3+} and Sm^{3+} on the synthetic zeolite NaX was studied. It was shown that the determining step in ion exchange process is the stage of the penetration of ions into the ion exchange resin. The diffusion coefficients are constant for each ion up to 50% of exchange; they increase with rising exchange temperature and are inversely proportional to the ionic radius. The function $\log D_i - \frac{1}{T}$ is linear for all ions in the temperature range studied. The activation energy of this process decreases proportionately to the decrease in ionic radius. It was shown that the cations are not dehydrated in the ion exchange process. By extrapolation the energy of activation and coefficient D_0 for the diffusion of Pr^{3+} ion into the NaX zeolite have been determined.

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AA 0042613

D

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, /- 76.

239101 CALCINING SHAFT FURNACE with a fluidised bed
includes zone 1 for the calcination, and two
zones 2 for preheating with flue gases, as well as
zone 3 for cooling the product. The material is
loaded by unit 4 feeding the fluidised bed of zone 2
and then passes by external chute 5 into lower zones
with flow control by gates. The bottom 6 carries
burners 7 using natural gas with nozzles designed
for admission of dust-loaded air.
30.6.66 as 1087769/29-33. V.M.DEMENT'EV & YU.P.NEKHLEBAEV.
DONETSK FERROUS METALLURGY RES.INST.(14.8.69.)
Bul 10/10.3.69. Class 80c. Int.Cl. C 04c.

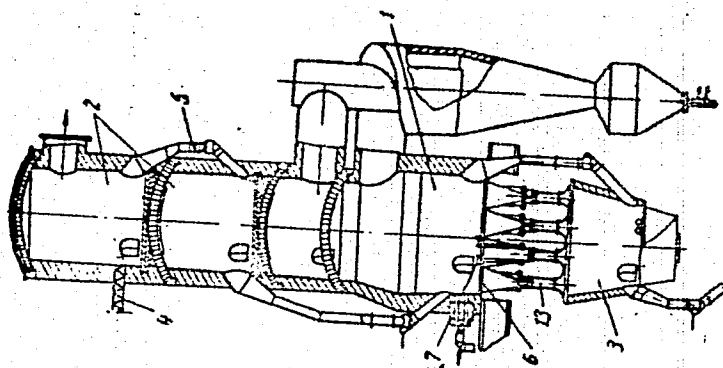AUTHORS: Dement'yev, V. M.; Nekhlebayev, Yu. P.

Donetskiy Nauchno-Issledovatel'skiy Institut Chernoy
Metallurgii

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AA0042613

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DEMENT'YEV, V.P.

DEPARTMENT OF THE NAVY
NAVAL INTELLIGENCE SUPPORT CENTER
TRANSLATION DIVISION
4301 SUITLAND ROAD
WASHINGTON, D.C. 20390

CLASSIFICATION: UNCLASSIFIED

APPROVED FOR PUBLIC RELEASE. DISTRIBUTION UNLIMITED

TITLE: Effect of Laser Beams on Biological Objects

Vozdeystviye luchey kvantovogo Generatora (lazera)
na biologicheskiye ob'yekty

AUTHOR(S):   Piruzyin, L. A.; Dement'yev, V. P.; Barsegyan, L. Kh.;
             Savchenko, G. S.; Rogovin, V. V.; Martsulevich, L. V.;
             Romanov, G. V.

PAGES: 20

SOURCE: Paper Delivered at 42nd Assn., Houston Tex.,
             27 April 1971

ORIGINAL LANGUAGE: Russian

TRANSLATOR: DMY

NISC TRANSLATION NO. 1167   APPROVED JTK
                                DATE 1 November 1971

DEMENT'YEV, V.P.

Lasers

EFFECT OF LASER BEAMS ON BIOLOGICAL OBJECTS

[Demen'tyev, V. P.; Morozgang, L. Kh.; Savchenko,
Luchey Ivantovoyo Excitators; L.; V.; Vozdeystviye ob'yekty.
Paper Delivered at 63rd ASMA, Houston, Texas, 27 April 1971, Russian]

The present work investigates the effect of focused and unfo-
cussed neodymium-glass laser beams operating at 10,600 Å on pigmented
and nonpigmented tissue in an attempt to explain the degree of damage
to a biological structure as a function of its pigmentation.

Theoretical computations are made of the temperatures reached
in tissue at different laser radiation energy levels, making possible
a preliminary estimate of the temperature generated in the tissue at
a given irradiation energy. Morphological investigations confirmed
the theoretical computations of the temperature coefficients.

Electron microscope investigations have shown that when pig-
mented tissue is subjected to laser radiation, mitochondria are the
most labile cellular structures. Their total or partial destruction
is attributed to the thermomechanical effect of the laser beam that
leads to great temperature and, subsequently, pressure drops which
could be the main cause of the damage to the cristae and mitochondrial
membrane.

Investigation of the concentration of free radicals in pigmented
densities do not disturb the physical and chemical properties of the
tissue subjected to an unfocused laser beam has shown that low energy
tissue that might impair biochemical processes.

The results of the investigation described above facilitate a
better understanding of the problem of the effects of light on the
activity and properties of living matter, since to date there has been
no unified picture of such effects on bioobjects encompassing the en-
tire frequency spectrum from the far infrared to the ultraviolet. Be-
sides the scientific interest involved in an explanation of the mecha-
nism of action of a powerful light flux on biostructures, the investi-
gation has important practical applications in space biology and medi-
cine, especially related to the problem of ensuring astronaut protec-
tion against light effects.

The introduction of lasers into the arsenal of scientific labora-
tories has made it possible to begin investigations dealing with the
effect of powerful light fluxes on biological objects. In this matter,
the development of specific technical conditions for laser operation

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USSR

UDC: 621.396.677.833(088.8)

DEMENT'YEV, V. P., KUZ'MIN, I. V., and LOGINOV, I. V.

"Passive Relay"

Avt. sv. SSSR (Author's Certificate USSR) Class 21a⁴, 46/01,
(H 01 q 15/00), No. 275171, Application 19.02.69, Publication
12.10.70 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No.
3B68P)

Translation: The proposed device consists of a reflecting array
with curvilinear edges. The upper and lower edges are made in
different parabolic curves with a common focal axis.

1/1

- 18 -

USSR

UDC 512.25/.26+519.3:330.115

DEMENT'YEV, V. P.

"Problem of Selecting Types of Equipment"

Metody Upr. Bol'shimi Sistemi. T. 2, [Methods of Control of Large Systems, Vol. 2--Collection of Works], Irkutsk, 1970, pp 60-62, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1970, Abstract No. 5V557).

Translation: An application of a dynamic programming plan.

1/1

USSR

UDC: 621.396.677.833

DEMENT'YEV, V. P., KUZ'MIN, I. V., LOGINOV, I. V., LOKSHIN, V. L., YAMPOL'SKIY, V. G.

"A Passive Radio Relay Unit"

Abstract: This Author's Certificate introduces a passive radio relay unit made up of a reflecting array with curvilinear edges. As a distinguishing feature of the patent, the mean effectiveness of the unit is increased, and especially the effectiveness in the case of subrefraction by making the upper and lower edges of the array conform to different parabolic curves with a common focal axis and a high ratio of the focal parameters of the parabolic curves, which may, for instance, be equal to one hundred.

1/1

USSR

UDC 541.183.5:546.791

DEMENT'YEV, V. S., SYROMYATNIKOV, N. G., and OSTAPOVA, N. V.

"Study of the Uranium Isotope Exchange in the System Solution-Sorbent"

Abstract: A study was carried out on the interphase isotope exchange of uranium between the solutions and the sorbents in contact with them such as ion exchange resins, aluminum oxide and BUU charcoal. It was determined that, depending on the composition of the solution, type of the sorbent and contact conditions, the periods of half-exchange $T_{\frac{1}{2}}$ vary from about 4 min to about 4 hrs at room temperatures. The pH of the solution, one of the basic indicators of its composition, which determines the state of uranium and the degree of sorption, has a definite effect on the rate of isotope exchange. The exchange rate dependence on the pH is very complex, reflecting the changes in uranium states and its mobility in solution. It has been stated that the exchange rates of the dissolved and adsorbed uranium are determined by the rate of diffusion "film"; this is supported by the fact that the half-exchange period $T_{\frac{1}{2}}$ is changed when the intensity of mixing is altered and when the composition of the solutions in contact with the sorbent are changed.
1/1

USSR

GLEBOV, N. I., DEMENT'YEV, V. T., SYCHEV, A. N.

"The Dynamics of Development of Homogeneous Technical Systems"

Sb. tr. In-t mat. Sib. otd. AN SSSR [Collected Works of Institute of
Mathematics, Siberian Division Academy of Sciences USSR], No 8, 1971,
pp 51-67, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972,
Abstract No 3 V466).

NO ABSTRACT.

1/1

USSR

UDC 621.374

DEMENT'YEV, YU. A.

"Magnetic Elements with a Large Signal/Noise Ratio"

Elektron. tekhnika. Nauchno-tekhn. sb. Ferrit. tekhn. (Electronic Engineering. Scientific and Technical Collection. Ferrite Engineering), 1970, vyp. 3 (25), pp 63-65 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G259)

Translation: A magnetic element of the transfluxor type made of a thermally stable ferrite type 102P is investigated. The magnitude of the signal/noise ratio in the case of special wiring of the read winding is appreciably higher than for the "classical" two-hole transfluxor.

1/1

Physical Properties

USSR

UDC: 669.01.018.5:669.784:538.21

DEMENT'YEVA, G.P., LIVSHITS, B.G., LIVSHITS, L.B., and MILAYEV, I.M., Moscow
Institute of Steel and Alloys

"Magnetic Properties of Cast Hard-Magnetic Alloys in the System Manganese --
Aluminum -- Carbon"

Abstract: Studies were made to determine the technological possibilities and
prospects of Mn -- Al -- C cast alloys as permanent-magnet materials to compete
with alloys containing nickel and cobalt. In the experiments, the alloy (chemical
analysis: 71.3% Mn, 28.2% Al, 0.99% C) was melted in a 5-kg induction furnace in
an argon atmosphere (in an alundum crucible) and poured into 13-15-mm-diameter
quartz tubes 150-180 mm in length. Branc MRO manganese, branc AVOOO aluminum, and
carbon in the form of graphite were used for the melt. All specimens were homogenized
at a temperature of 1100°C for one hour. According to the curves of magnetic
property changes after normalization from 1100°C and tempering, it was determined
that the maximal magnetic properties are obtained after a 15-minute holding time at
a tempering temperature of 650°C. Carbon, in addition to improving the magnetic
properties, increases the hardness and brittleness of Mn -- Al alloys and promotes
directional crystallization. On the basis of the results obtained, it was postu-
1/2

USSR

DEMENT'YEVA, G.F., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 5, 1970, pp 120-122

lated that the cast Mn -- Al -- C alloy could replace certain Fe -- Mi -- Al cast alloys containing up to 30% Ni. However, additional measures will be required to lower the susceptibility of the Mn -- Al -- C alloy to crack formation in heat treatment.

2/2

USSR   UDC 553.98:551.247:550.837.622.241(574.12/13)

ANISHCHENKO, G. N., DEMENT'YEVA, I. G., VILENCHIK, A. M., MITROFANOV, K. P.,
POGREBINSKIY, S. A., ROMANENKO, V. P., and FOMENKO, K. Ye., Trust for Special
Geophysical Operations, Ministry of Geology, USSR

"Electrometric Research on the Border Zone of the Pre-Caspian Depression by
the Method of Telluric Currents"

Moscow, Neftegazovaya Geologiya i Geofizika, No 5, 1972, pp 36-42

Abstract: The article summarizes the results of research in the pre-Caspian
depression by the method of telluric currents. This method was used for
mapping the elements of the salt tectonics in this territory on the basis
of the acute difference between the specific resistence of the salt and that
of the sediments of the persalt complex. The results, classified according
to the regions of the investigated territory and the character of the re-
lation with the cross-section, are briefly set forth. An analysis of the
nature of the telluric anomalies is given. 4 figures.

1/1

USSR

UDC 678.664 - 405.8.01:536.485

DEMENT'YEVA, M. A., OKUNEVA, A. G., POKROVSKIY, L. I., and KRYUCHKOV, F. A.

"The Effect of the Nature of Alkylene Oxide on the Properties of Frostresistant Elastic Polyurethane Foam"

Moscow, Plasticheskiye Massy, No 3, 1972, pp 61-62

Abstract: An attempt was made to synthesize frostresistant elastic foam poly-urethane based on tetrahydrofuran copolymerized with ethylene and 1,2-butene oxides. Polyurethane foam was obtained at room temperature. Copolymers of tetrahydrofurane with ethylene oxide and 1,2-butene oxide did not differ in their properties except for viscosity: the increased content of ethylene oxide resulted in higher viscosity of the copolymer. The behavior of 1,2-butene oxide copolymer was the opposite. It has been established that regardless of the nature of alkylene oxide, the frostresistance of polyurethane foam is main-tained down to about -55 to -60°C. The type of alkylene oxide used has an effect on the content of primary hydroxyl groups in the copolymers, which are responsible for their reactivity towards isocyanates. A higher content of primary hydroxyl group in the tetrahydrofurane + ethylene oxide copolymer makes it possible to use a less active toluylene diisocyanate T-65 for the synthesis of polyurethane foam.
1/1

RELATIVE WATER TRANSPARENCY OF THE INDIAN OCEAN

Voytov, V. I.; Dement'yeva, M. G.

Based on the observations of the depth of visibility of the white disc made mostly during the last years, a map of the relative water transparency in the northern and Antarctic portions of the Indian Ocean has been constructed. Relative transparency as a function of plankton concentrations and the relationship between the distribution of relative transparency and surface water circulation are analyzed.

D.H.

REEL/FRAME
19721279

DEMENT'YEVA, M.I.

gas chromatography

USE OF GAS CHROMATOGRAPHY IN PETROCHEMISTRY

(Conference in Moscow)

[Article by Doctor of Chemical Sciences W. G. Berezkin, Moscow,
Vestnik Akademii Nauk SSSR, Russian, No 6, June 1973, pp 129-
130]

Increase of the effectiveness of scientific investiga-
tions and growth of the productivity and rate of chemical pro-
cesses used in industry are stipulated to a considerable degree
by the successful development of new physicochemical methods of
conducting scientific experiments and controlling production.
One such method is gas chromatography. Many quantitative deter-
minations previously considered practically impossible are per-
formed by means of gas chromatography in the course of minutes,
and in some cases even of seconds. The method has high resolu-
tion and sensitivity, is readily automated, and makes it possible
to effectively control technological processes.

The scientific councils for Petrochemistry and Chromato-
graphy, the Institute of Petrochemical Synthesis imeni A. V.
Topchiyev of the AS USSR and the Scientific and Technological
Council of the Ministry of Petroleum-Refining and Petrochemical
Industry USSR conducted on 5-8 February the first All-Union Con-
ference on the Use of Gas Chromatography in Petrochemistry. Par-
ticipating in it were over 200 persons representing over 90
scientific research organizations, enterprises, special design
offices and VUZ. Thirty-four reports were heard.

In his introductory speech the Chairman of the Scientific
Council for Chromatography of the AS USSR K. V. Chmutov noted
the ever-increasing importance of gas chromatography in the ana-
lysis of complex mixtures in petroleum refining and petrochemis-
try. In studying the thermodynamics of absorption and adsorp-
tion and the processes of chemisorption and catalysis, and in
determining the diffusive characteristics of gases and liquids
and other physicochemical characteristics.

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The contemporary state of the production and application of Soviet stationary liquid phases, solid carriers and absorbents for gas chromatography were examined in the reports of K. I. Sakodynskiy, D. G. Distanov et al and N. I. Dement'yeva et al, and the use of computers to process the results of gas-chromatographic investigations -- in the report of V. A. Barnov.

The held conference demonstrated the expansion of the applications of gas chromatography in petrochemistry and designated the paths of the further development of those methods.

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1/2   017
UNCLASSIFIED
TITLE--QUANTITATIVE DETERMINATION OF LOCAL ANESTHETICS -U-
PROCESSING DATE--16OCT70

AUTHOR-(02)-DEMENTYEVA, N.N., KULESHOVA, M.I.

COUNTRY OF INFO--USSR

SOURCE--FARMATSIYA (MOSCOW) 1970, ISSLED, INST., MOSCOW, USSR

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANESTHETIC, DRUG ANALYSIS, VOLUMETRIC ANALYSIS,
CHROMATOGRAPHIC ANALYSIS, ELECTROCHEMICAL ANALYSIS, PHOTOMETIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1150
STEP NO--UR/0466/70/019/001/0062/0066
CIRC ACCESSION NO--AP0115169
UNCLASSIFIED

CIRC ACCESSION NO--AP0115169   UNCLASSIFIED   PROCESSING DATE--16OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. VOLUMETRIC, PHOTOMETRIC,
ELECTROCHEM. AND CHROMATOGRAPHIC METHODS FOR THE DETN. OF LOCAL
ANESTHETICS WERE REVIEWED.   FACILITY: TSENT. APTECH. NAUCH.
ISSLED. INST., MOSCOW, USSR.

UNCLASSIFIED

USSR

PEGEL', V. A., DOKSHINA, G. A., and DEMENT'YEVA, T. A., Scientific Research Institute of Biology and Biophysics, Tomsk

"Changes in the Content of Thiol Groups in the Mitochondria and Hyaloplasm of the Liver and Myocardium of Rats After High-Energy Irradiation"

Abstract: The content of total, protein, and non-protein thiol groups in the mitochondria and hyaloplasm of the liver and myocardium of rats was determined 10, 30 min, 1, 2, 4, 6, 24, 48, and 72 hrs after irradiation of the animals with gamma-rays of an energy $\approx$ 25 Mev in a dose of 1,000 rad on a betatron. The content of SH groups in the mitochondria of the liver and the myocardium decreased. This decrease was due principally to a reduction of the content of protein SH groups; the change in the content of non-protein SH groups was insignificant. Changes in the content of SH groups in the hyaloplasm of the liver and myocardium were of a phasic type. The decrease in the content of SH groups in the mitochondria was accompanied by an increase of the content of these groups in the hyaloplasm. The decrease in the content of SH groups in the mitochondria was presumably due to the inhibition of oxidative phosphoryla-

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USSR

PEGEL', V. A., et al., Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Biologicheskikh Nauk, No 5, Apr 71, pp 108-113

tion in them that was established in earlier work. The increase of the content of SH groups in the hyaloplasm was apparently associated with a release of thiol enzymes by mitochondria because of structural damage to mitochondria membranes.

2/2

Mechanical Properties

USSR

UDC 621.785:621.9-462

POZDNYAKOV, L. G., GANZULYA, A. P., DEMENT'YEVA, ZH. A., ATAMANENKO, V. A.,
PAVLOVTSEVA, N. M., and BUTENKO, V. P.

"Investigation of the Effect of Single- and Double-Sided Cooling in Temper
Hardening of Pipes on Their Mechanical Properties"

Dnepropetrovsk, Metallurgicheskaya i Gornorudnaya Promyshlennost', No 5, Sep-
Oct 70, pp 38-40

Abstract: A study was made to determine the effect on mechanical properties
of single- and double-sided cooling in temper hardening of low-carbon steel
pipes intended for use in pipe lines in the Extreme North. Tempering of low-
carbon 14KhGS steel sheets 11 mm thick was done at 900°C in a water tank
(double-sided cooling) and under spraying (single-sided cooling), simulating
cooling conditions in service, followed by annealing at 600°C for 1 hour.
Tests were also conducted on pipes 1020 mm in diameter with an 11 mm wall thick-
ness. The experiment procedure and equipment are described and the variation
of mechanical and physical properties across the sheet thickness is shown.
The structure obtained after tempering with single- and double-sided cooling

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USSR

POZDNYAKOV, L. G., et al, Metallurgicheskaya i Gornorudnaya Promyshlennost',
No 5, Sep-Oct 70, pp 38-40

was found to be the same. The authors recommend single-sided cooling, which
appears to be more suitable for tempering large-diameter pipes, with wall
thickness up to 12 mm made of low-carbon 14KhGS and 17GS steels.

2/2

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USSR

2.

UDC 629.78.063

DUPLISHCHEV, M. I., VORONTNIKO., A. A., POLITIKO, I. V., LAVRINENKO, B. M., DEMERTSEVA, M. F., and BLINOVA, M. I.

"A Point Method of Attaching Spherical High-Pressure Containers on Aircraft"

Dnepropetrovsk, Vopr. Prochnosti, Nadezhnosti i Razrush, Mekh. Sistem (Problems of the Strength, Reliability, and Failure of Mechanical Systems), 1969, pp 288-293 (from Referativnyy Zhurnal, Raketostroyeniye, No 5, 1972, Abstract No 5.41.193, Resume)

Translation: In connection with the use of gases at high pressures on aircraft, capacities of the required strength and volume are installed aboard the aircraft. The extensive use of spherical capacities for storing gases at high pressure aboard aircraft brings about certain difficulties which originate in solving the problem of reliable fastening of spherical containers to the frame. With the aim of decreasing the weight of the fastening elements, their simplification, and economization of useful volumes of the aircraft compartments, a point method of fastening spherical containers was developed, the essence of which consists in the fact that the spherical container, which has a threaded flange, is screwed into the base, which is attached to the frame, and then the connection is locked by set bolts. The
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USSR

DUPLISHCHEV, M. I., et al., Dnepropetrovsk, Vopr. Prochnosti, Nadezhnosti i Razrush, Mekh. Sistem, 1969, pp 288-293 (from Referativnyy Zhurnal, Raketo-stroyeniye, No 5, 1972, Abstract No 5.41.193, Resume)

spherical container remains in such a position during the entire operating period. The indicated method of fastening spherical containers makes it possible: 1) to save weight on structural elements and to economize the useful volumes of the compartments; 2) easily to assemble and disassemble the systems in case of necessity; 3) to attain a high level of production technology.

2/2

- 3 -

Infrared Rays

USSR

UDC 621.315.592

DEMESHINA, A.I., MURZIN, V.N., UMAROV, L.M. [Institute Of Physics imeni P.N. Lebedev, AS, USSR, Moscow]

"Longwave Infrared Absorption Spectra Of n-Type Indium Antimonide"

Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 609-614

Abstract: Measurements are made of the absorption spectra of pure crystals of n-InSb (in disks 9-mm in diameter and 0.08-3.5--mm thick) with $N_D- N_A \sim 5.10^{13}$ cm^{-1} in the far-infrared region of the spectrum of 50-2000 micrometer at a temperature of 1.6--3.5° K in various magnetic fields with an intensity up to 40 kilogram force. It is shown that in the majority of crystals, the absorption increases with a decrease of frequency approximately as $C(\sim \omega)^{-3.1}$, starting with an energy of 4-7 Mev, and in the interval of the spectrum investigated the electronic transition from the zone of the impurity states into the InSb is determined. Two regions with different absorption mechanisms were located as a result of the measurements. In the region $h\nu \geq 4$ Mev, spectra of cyclotron absorption were observed, connected with transitions among the different Landau levels of free and impurity electrons. In the longest wave part of the infrared spectra absorption bands were observed, resulting from transients between the principal and excited states of the fine donor impurities in the InSb within the limits of the system of sublevels of the Landau lower levels. In the crystals investigated separation of the zone of impurity states from the conduction band 1/2

was observed in the magnetic fields H $\geq$ 10 kilogram force. The authors thank B.M. Vul and V.S. Vavilov for their interest in the work and V.V. Buzdin for his assistance during the measurements. 4 fig. 20 ref. Received by the editors, 9 Feb 71; in finished rewording, 27 May 71.

2/2

1/2   019

TITLE--FAR INFRARED ABSORPTION IN N GERMANIUM CAUSED BY IMPURITY
   INTERACTION -U-

PROCESSING DATE--18SEP70

AUTHOR-(04)-DEMESHINA, A.I., KORCHAZHKINA, R.L., KUZNETSOVA, N.N., MURZIN,
   V.N.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 428-30

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--IR IRADIATION, ABSORPTION, GERMANIUM SEMICONDUCTOR,
   SPECTROSCOPIC ANALYSIS, PHOSPHORUS, GALLIUM, ELECTRON SHELL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0571

STEP NO--UR/0449/70/004/002/0428/0430

CIRC ACCESSION NO--AP0105556

CIRC ACCESSION NO--AP0105556

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FAR IR SPECTROSCOPY WAS USED TO STUDY THE INITIAL STAGES OF THE INTERACTION OF FINE DONOR IMPURITIES IN GE AT LOW CONCNS. WHEN THE ELECTRON SHELLS OF ONLY THE CLOSEST IMPURITY ATOMS OVERLAP. SAMPLES OF GE, DOPED WITH P AND COMPENSATED WITH GA HAVING DEGREES OF COMPENSATION 0.05-0.5 WERE USED. THE DATA FOR SAMPLES CONTG. THE SAME CONCN. OF P BUT DIFFERENT DEGREES OF COMPENSATION SHOWED GOOD AGREEMENT WITH THEORETICAL RESULTS. FOR SAMPLES WITH COMPENSATION 0.45, WHICH FALLS OUTSIDE THE LIMITS OF APPLICABILITY, THE VALUE OF THE ABSORPTION COEFF. PER UNIT OF COMPENSATION INCREASES AS THE CONCN. OF THE DONOR IMPURITY INCREASES IN AGREEMENT WITH THE MAIN CONCLUSIONS OF THE THEORY. THE DIFFERENCE WHICH IS OBSD. IS ATTRIBUTED TO THE POSSIBLE NARROWING OF THE ABSORPTION BAND AND A SHIFT OF ITS MAX. TO SHORTER WAVELENGTHS.

UNCLASSIFIED

USSR

DEMESHKINA, V. V., IL'IN, V. A.

UDC: 629.78.015.076.8:531.55:523.3

"Investigation of Trajectories of a Space Vehicle Starting from the Surface of the Moon and Returning to the Earth's Atmosphere"

Translation: The authors investigate the trajectories of a space vehicle starting from the surface of the moon and returning to the Earth's atmosphere. The analysis is done by means of an approximate method in which the dimensions of the sphere of action of the moon are disregarded in comparison with the Earth-moon distance in calculating the geocentric segment, motion along a circular Keplerian orbit is substituted for the true motion of the moon, and no account is taken of the change in the vector of orbital velocity of the moon during selenospheric motion of the vehicle, nor of the extent of the active segment of the trajectory during the start from the surface of the moon. The scheme of calculation of the characteristics of the geocentric and selenocentric motion of the vehicle is briefly discussed. The properties

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USSR

DEMESHKINA, V. V. and IL'IN, V. A., Uch. zap. Tsentr. aero-gidrodinam. in-ta,
1970, 1, No 3, pp 56-64

of invariance of the parameters of the trajectory are established with respect
to substitution of an apogeeless geocentric moon-Earth flight by an apogee
flight and vice versa, as well as with respect to mapping of the trajectory
relative to the plane of the lunar orbit. Data are given from the results of
computations of required velocities at the end of the active segment of the
trajectory, and the regions on the surface of the moon from which it is pos-
sible to reach a given flight trajectory to the Earth. Estimates of geographic
latitudes of landing points are given in the case of lift-off from the North
Pole for trajectories with single-re-entry. Six illustrations, seven tables.
Resumé.

2/2

- 37 -

1/2   041
UNCLASSIFIED
TITLE--INVESTIGATION OF TRAJECTORIES OF CLOSE FLIGHTS AROUND THE MOON WITH
PROCESSING DATE--04DEC70
REENTRY INTO THE EARTH'S ATMOSPHERE. II -U-
AUTHOR-(03)-IIIN, V.A., DEMESHKINA, V.V., ISOTOMIN, N.A.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKIE ISSLEDOVANIIA, VOL. 8, MAY-JUNE 1970, P. 365-376

DATE PUBLISHED-------70

SUBJECT AREAS--SPACE TECHNOLOGY

TOPIC TAGS--TRAJECTORY, ATMOSPHERIC REENTRY, APPROXIMATION METHOD, LUNAR
SATELLITE, ORBIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605013/C08 STEP NO--UR/0293/70/008/000/0365/0376
CIRC ACCESSION NO--AP0140378
UNCLASSIFIED

CIRC ACCESSION NO--AP0140378   UNCLASSIFIED   PROCESSING DATE--04DEC70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF THE SELENOCENTRIC
MOTION OF A SPACE VEHICLE, SHOWING THE INVARIANCE OF THE CHARACTERISTICS
OF THIS MOTION WITH RESPECT TO A SUBSTITUTEION OF GEOCENTRIC APOGEE
FLIGHTS FOR NONAPOGEE FLIGHTS AND VICE VERSA. THE DIFFERENCE BETWEEN
PURELY NONAPOGEE (OR PURELY APOGEE) GEOCENTRIC FLIGHTS AND 'MIXED'
(PARTLY APOGEE AND PARTLY NONAPOGEE) GEOCENTRIC FLIGHTS IS OUTLINED.
ALL POSSIBLE CLASSES OF LUNAR ORBITAL TRAJECTORIES ARE EXAMINED, AND THE
CLASSES OF TRAJECTORIES OF PRACTICAL INTEREST ARE IDENTIFIED. IT IS
FOUND THAT LUNAR ORBITAL TRAJECTORIES COMPUTED BY AN APPROXIMATE METHOD
CORRELATE WELL WITH COMPUTATIONS BY THE METHOD OF SPHERES OF INFLUENCE.

UNCLASSIFIED

DEMESHKINA V.V.

Acc. Nr.: __AP0042551__

Trajectories for Close Flight About the Moon and Return to Earth

(Abstract: "Study of the Trajectories for a Close Flight Around the Moon and Return into the Earth's Atmosphere," by V. A. Il'in, V. V. Demeshkina and N. A. Istomin; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 48-58)

A detailed examination of spatial trajectories for close flight about the moon with return to the earth's atmosphere is presented; a large number of requirements are imposed on the analyzed trajectories (with respect to altitude above the surface, flight time to the moon and back, velocity at launching from an artificial earth satellite orbit, initial geocentric distances, inclination of flight planes, etc.). The study is made by an approximate method with a number of simplifying assumptions: 1) for the geocentric flight segments the radius of the lunar field of attraction is considered zero; 2) the effect of the lunar gravity field on the vehicle flying around that body is reduced to an instantaneous rotation of the entry selenocentric velocity to the vector of exit selenocentric velocity; 3) true lunar motion is replaced by motion in a circular Keplerian orbit; 4) change in the lunar velocity vector during the time of motion in the lunar sphere of attraction is neglected. On this basis the

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AP0042551.

authors formulate the problem of synthesis of trajectories for flight
around the moon and give a model for solving the problem. A classification
of trajectories for flight around the moon is given. The characteristics
of the geocentric segments for earth-moon and moon-earth flights are
analyzed.

19760519

USSR   UDC 539.3:534.1

MANEVICH, A. I., DEMESHKO, M. F., KRASOVSKIY, V. L., KUCHERENKO, V. M.

"Experimental Study of the Stability of Longitudinally Fastened Cylindrical
Shells Under Axial Compression"

V sb. Raschet prostranstv. konstruktsiy (Calculation of Three-Dimensional Struc-
tures -- Collection of Works), No. 14, Moscow, Stroyizdat, 1971, pp 87-102 (from
RZh-Mekhanika, No 9, Sep 71, Abstract No 9V319)

Translation: Tests of 48 cylindrical shell models are reported. The shells were
reinforced with stringers of open profile and the purpose of the test was to study
the effect of the positioning of the ribs on the stability under axial compression.
The shells and stringers were made of Kh18N9-n steel. In the case of shells with
high critical stress (small lengths, "strong" ribs) there is noted a considerable
deviation from structural-orthotropic theory especially under external position-
ing of the ribs (up to 40-50%). The effect of the sign of the eccentricity is
emphasized, however, quantitatively considerably less than the theoretical effect.
It was observed that with internal stringers the deformation curve may have an

1/2

ascending character after the bifurcation point. The varying nature of the loss in stability of shells of both types is noted. Analysis of the nature of the bulging and tensometric measurements showed that the deviation between theory and experiment in this range of parameters is basically associated with the characteristics of the mechanism for the loss of stability of shells with ribs of open profile not described by existing theories. To reform the theory it is necessary to take into account the mutual relationship between the bulging of elements of the shells and the entire shell. A computation scheme should include the possibility of bending of the walls of the ribs in the plane of least rigidity and also account for the redistribution of stresses in the skin and stringers after local bulging of the skin. Authors abstract.

Acc. Nr: AP0044680

Ref. Code: UR0531

PRIMARY SOURCE: Khirurgiya, 1970, Nr 1 , pp 32-37

THE EMPLOYMENT OF RHEOGRAPHY FOR THE DIFFERENTIAL DIAGNOSIS OF VASCULAR LESIONS OF THE LOWER EXTREMITIES

Demetskiy, A. M.; Surganova, S. F.

Under study was the suitability of rheography for the differential diagnosis of traumatic injuries and diseases of major arteries and veins of the lower extremities. Longitudinal rheography was used in obliterating endarteritis, atherosclerotic endarteritis, thrombophlebitis of deep veins and varicose dilatation of superficial veins, as well as in experiments on dogs in ligation of femoral arteries, femoral veins and venae saphena magna. Rheographic data were compared with the results of tensiometry and intravital roentgenovasography. The referred to investigations demonstrate that rheography reflects the degree of blood filling and elastic properties of vessels of the extremity. By the nature of changes of rheographic components one could assess the prevalent affection of arteries or veins.

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REEL/FRAME
19771411

TITLE--ISOMERIZATION OF ALPHA-(N-(BETA-CYANOETHYL)AMINO) KETONES TO
FUNCTIONAL DERIVATIVES OF PYRROLIDINE -U-

AUTHOR-(04)-FAVORSKAYA, T.A., ARTAMONOVA, I.L., DEMETYEVA, L.P.,
YAKIMOVICH, S.L.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (2), 280-1

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ISOMERIZATION, HETEROCYCLIC NITROGEN COMPOUND, CYANIDE, AMINE,
KETONE, PYRROLIDINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1108   STEP NO--UR/0409/70/000/002/0280/0281

CIRC ACCESSION NO--AP0104506
                        UNCLASSIFIED

2/2   008
CIRC ACCESSION NO--AP0104506
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE TITLE COMPDS. ME SUB_2 CACNR(CH SUB_2)SUB2CN (I, R EQUALS H OR ME) GAVE THE CORRESPONDING II AND III WITH ALK. CATALYSTS.   THUS, I (R EQUALS H) IN 50 ML ABS. ETOH CONTG. CATALYTIC AMT. KOH WAS HEATED 6 HR AT 35DEGREES TO YIELD 20PERCENT II (R EQUALS H), M. 114-15DEGREES.   I (R EQUALS ME) IN 20 ML ETOH AND 0.5 G ETONA ISOMERIZED COMPLETELY IN 2 DAYS TO II (R EQUALS ME), M. 36-7DEGREES AND III (R EQUALS ME), B SUB_7 86-7DEGREES, N PRIME20 SUBD 1.4795, D PRIME20 0.9439.

1/2   023   UNCLASSIFIED   PROCESSING DATE--30OCT7C
TITLE--SIMULATOR -U-

AUTHOR-(03)-RASSHCHEPLYAYEV, YU.S., SOLOVYEV, V.M., DEMIDENKO, A.V.

CCUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 243277
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NR 16
DATE PUBLISHED--12SEP70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--LINEAR CONTROL SYSTEM, ANALCG COMPTER, RC CIRCUIT, ELECTRONIC
    FEECBACK, PATENT, SIMULATION

CCNTRCL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1510   STEP NO--UR/0482/69/000/000/0000/0000

CIRC ACCESSICN NO--AA0127019
                              UNCLASSIFIED

CIRC ACCESSION NO--AA0127019
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MICROFICHE CF ABSTRACT CONTAINS
  GRAPHIC INFORMATION. SIMULATOR TO REPRODUCE DYNAMIC PROPERTIES OF
  LINEAR CCNTROL SYSTEMS FROM THEIR EXPERIMENTAL FREQUENCY CHARACTERISTIC,
  FOR ANALOG COMPUTER SYSTEMS, IS ASSEMBLED FROM TWO TYPES OF MODULES.
  ONE MODULE CONTAINS AN OPERATIONAL AMPLIFIER AND CN ITS INPUT A DOUBLE T
  SECTION RC CIRCUIT, WITH ANOTHER RESISTOR IN A FEEDBACK CIRCUIT. THE
  SECOND MODULE IS AN OPERATIONAL AMPLIFIER WITH A RESISTOR AND A
  CAPACITOR IN ITS FEEDBACK CIRCUIT, AND AN L SECTION DIVIDER WITH A
  RESISTOR AND CAPACITOR IN PARALLEL, AND A RESISTOR ON ITS INPUT.
  FACILITY: ROSTOVSKOYE VYSSHEYE KOMANDNC-INZHENERNOYE UCHILISHECHE IM.
  GLAVNCGO MARSHALA ARTILLERII M. I. NEDELINA.

UNCLASSIFIED

USSR

DEMIDENKO, I. I.; LOMINO, N. S.; PADALKA, V. G.

"Plasma Current in a Strong Transverse Magnetic Field"

Leningrad, Zhurnal Tekhnicheskoy Fiziki; July, 1971; pp 1392-9

ABSTRACT: Characteristics of the motion of a plasma current across an inhomo-
geneous transverse magnetic field of fairly high intensity were studied. It
is shown that in a strong magnetic field a complete cessation of the injected
jet and its reflection from the magnetic barrier occurs. The occurrence of a
polarized interaction of the injected and reflected currents is the cause of
the development of an instability and entrapment of the plasma in the direc-
tion of the lines of force of the magnetic field.

    The article includes 6 equations and 7 figures. There are 26 references.

1/1

USSR   UDC 632.95

VENGERSKAYA, KH. YA., DEMIDENKO, I. M., and MAYOROVA, T. N.

"Determination of Small Quantities of Paraquat, Diquat and Bipyridyl Phosphate in the Air"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kromov i vnesh. sredy (Works of the Second All-Union Conference on Investigation of Residues of Pesticides, and Prevention of Pesticide Contamination of Foodstuffs, Fodder and the External Environment), Tallinn, 1971, pp 267-268 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N455)

Translation: In order to determine paraquat and dipyridyl phosphate by the colorimetric method, Nessler's reagent is added to an acid solution of the specimen, and the intensity of the resultant dye is determined. The sensitivity of the reaction is 10 γ in 1 ml of solution. Diquat forms dye complexes in an alkaline medium. The ultraviolet absorption spectra of these herbicides were studied.

1/1

1/2   025   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--EVALUATING THE EFFECTIVENESS OF ANTIOXIDANT ADDITIVES TO GASOLINES
 -U-
AUTHOR-(04)-GUREYEV, A.A., BOGERUK, L.G., KUZMINA, N.A., DEMIDENKO, K.A.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (2), 2-4

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--GASOLINE, FUEL ADDITIVE, ANTIOXIDANT ADDITIVE, THERMAL
 CRACKING, CYCLOHEXENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1520   STEP NO--UR/0318/70/000/002/0002/0004

CIRC ACCESSION NO--AP0118507
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0118507
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CYCLOHEXENE (I) WAS USED AS A
STD., INSTEAD OF GASOLINE FOR THERMAL CRACKING, TO DET. THE ANTIOXIDANT
EFFECTIVENESS BY AN OXIDN. TEST AT 100DEGREES. FOR INDUCTION PERIODS OF
SMALLER THAN 400 AND LARGER THAN 400 MIN, THE DIFFERENCES BETWEEN 2
DETNS. WERE SMALLER THAN 15 AND SMALLER THAN 30 MIN, RESP. AFTER THE
DETN., I WAS RECOVERED BY DISTN. AND REUSED.

UNCLASSIFIED

USSR

DEMIDENKO, L. S., KOROLYUK, S. L., SAMOYLOVICH, A. G., CHELOVA, T. N.

"Transverse Reluctance of n-Ge in Quantizing Magnetic Fields"

Abstract: A study was made of a method of calculating the transverse reluctance
of n-Ge in quantizing magnetic fields for sufficiently pure samples and it is
possible to consider that the scattering takes place only on acoustic phonons.
The calculation method is based on the oscillator center drift method general-
izing the calculations of V. L. Gurevich, et al. [ZhETF, No 40, 199, 1961] to
the case of anisotropic mass. Good agreement between the calculated data and
experimental results is demonstrated. For different directions of the magnetic
field, a different field dependence is observed which is connected with the
intertrough redistribution of the electrons. An interesting feature of the
anisotropic scattering of the electrons in n-Ge is the primary contribution of
the transverse phonons to the mobility and the increase in this contribution
with an increase in the magnetic field. The divergence of the experimental
data of J. W. Gallagher, et al. [Phys. Rev., No 161, 793, 1967] with the
theoretical calculations presented here decreases with an increase in the mag-
netic field and when H = 170 kiloersteds, it is about 40%. The divergence is
assumed to be caused primarily by the large number of impurities in the samples.
1/1

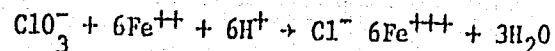USSR   UDC 614.72:[632.964:631.542.25

VENGERSKAYA, Kh. Ya., DEMIDENKO, N. M., MAYOROVA, T. N., and IZMAYLOVA,
G. D., Tashkent Scientific-Research Institute, Tashkent Medical Institute

"Methods of Determination of Some Defoliants in Air"

Abstract: Colorimetric and spectrophotometric analytical methods were used
to detect the presence in the air of the cotton defoliants magnesium chlorate-
chloride (I) -- $Mg(ClO_3)_2 \cdot MgCl_2$ -- molecular weight 191.23, a greenish mass,
readily soluble in water; calcium chlorate-chloride (II) -- $Ca(ClO_3)_2 \cdot CaCl_2$ --
a yellow liquid readily mixible with water; and acrofol (III) - the sodium
salt of cis-beta-chloroacrylic acid.

A preparation in the form of a yellow powder, readily soluble in water, but
poorly in organic solvents. The colorimetric determination of (I) and (II)
is based on the capacity of their chlorates when boiled in an acid medium
to be reduced by the ferrous ion to chlorides as follows:

$$ClO_3^- + 6Fe^{++} + 6H^+ \rightarrow Cl^- \ 6Fe^{+++} + 3H_2O$$

1/2

USSR

VENGERSKAYA, Kh. Ya., Gigiyena i Sanitariya, "Meditsina," Vol 36, No 8,
Aug 71, pp 109-110

The detection of (III) is based on the formation of a colored complex as a
result of the reaction of the preparation with pyridine in an alkaline medium.
The spectrophotometric method of detection is accomplished with the use of a
spectrophotometer and an absorbent of degreased cotton and chlorinated poly-
vinyl chloride filters for aerosols of (I) and (II), and an absorbent filled
with distilled pyridine for the vapors of (III).

2/2

USSR   UDC: 537.312.62

BARON, V. V., DEMIDENKO, T. F., KLIMOV, S, I., SAVITSKIY, Ye. M., TUREVSKIY,
V. M.

"Superconducting Magnets for Quantum Paramagnetic Amplifiers"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting
Materials--collection of works), Moscow, "Nauka", 1970, pp 209-215 (from
RZh-Radiotekhnika, No 5, May 71, Abstract No 5D550)

Translation: On the basis of the operating principle and parameters of the
paramagnetic crystals of quantum paramagnetic amplifiers, the authors give
a basis for the requirements to be satisfied by the characteristics of super-
conducting magnets and solenoids. The results of development and experimental
verification of superconducting magnets and solenoids with winding of copper-
-plated and insulated grade RNS wire and shields of NT-1 alloy and compound
are presented together with their design peculiarities. Types of supercon-
ducting magnets and sectionalized solenoids are created in the developmental
process. Two illustrations, bibliography of four titles.

1/1

USSR   UDC 534.2

DEMIDENKO, T. F., STEPANOVA, N. V., and SHMAL'GAUZEN, V. I.

"Disintegrated Structure of Water as a Source of Random Force for
Acoustic Measurement"

Translation: To evaluate the efficiency of noise- and vibration-insulating
device, it is desirable to have a point source of noise exhibiting a broad
spectrum, with adequate stability and easy reproducibility. D. G. Tonkonogov
proposed using for this purpose a nonimmersed liquid jet escaping at a
pressure of 2-4 atm from a small orifice (0.3-0.6 mm in diameter). Results
of tests made of the spectral properties of pressure pulsations generated
at the surface of the disintegrating liquid jet are presented. A semi-
empirical formula is proposed for the function of the spectral density of
the pressure pulsations. The spectral density at low frequencies is con-
stant and decays at high frequencies as $\omega^{-3.4}$.

1/1

USSR

UDC 537.312.62:538

BARON, V. V., DEMIDENKO, T. F., KLIMOV, S. I., SAVITSKIY, Ye. M., and TUREVSKIY, V. M.

"Superconducting Magnets for Quantum Paramagnetic Amplifiers"

Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 209-215

Translation: Based on the operating principle and parameters of paramagnetic crystals in quantum paramagnetic amplifiers, the requirements placed on characteristics of superconducting magnets and solenoids are explained.
    Results are presented from the development and experimental testing of superconducting magnets and solenoids with windings of copper and type RNS insulated wire and shields of NT-1 alloy and compounds, as well as their design features.
    Types of superconducting magnets and sectioned solenoids were created in the process of development.
    2 figures, 4 biblio. refs.

1/1

- 91 -

USSR   UDC: 519.2

DEMIDENKO, Ye. Z.

"Estimate of Parameters in Nonlinear Regression"

Mat. Metody v Ekon. i Mezhdunar. Otnosheniyakh [Mathematical Methods in Economics and International Relations--Collection of Works], Moscow, 1972, pp 75-98 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V163, by S. Ayvazyan)

Translation: A general regression model such as $y_i = f(X_i; \beta) + \varepsilon_i$, $i=1,\ldots,n$ is studied, where y_i is the ith observation of a variable, X is the corresponding (ith) observation of the vector of independent variables, β is the vector of the unknown parameters, ε_i is the value of the residual component (random error) in the ith observation. In situations where the function $f(X; \beta)$ depends non-linearly on parameters β, the author suggests approximate iterative methods for construction of estimates of the least squares $\hat{\beta}$ for unknown parameters β. These methods essentially perform the task of finding the minimum point $(\hat{\beta})$ of the nonlinear function of many variables (β) in the form

$$Q(\beta) = \sum_{i=1}^{n} [y_i - f(X_i; \beta)]^2$$

1/2

USSR

Demidenko, Ye. Z., Mat. Metody v Yekon. i Mezhdunar. Otnosheniyakh, Moscow, 1972, pp 75-98 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V163, by S. Ayvzyan)

and use two known approaches: "feeling" the extreme by motion along the gradient of the function $Q(\beta)$ and linearization (with respect to β) of the function $f(X; \beta)$ by means of its expansion into a Taylor series in the neighborhood of a certain point $\beta = \beta_0$ (with subsequent analysis of the linear model and application of the classical system of so-called normal equations). Actual numerical examples (of economic importance) are presented, plus computer programs (in ALGOL-60) for the method discussed.

2/2

TITLE--BAND NONPARABOLICITY EFFECT UPON FREE CARRIER ABSORPTION -U-

AUTHOR--DEMIDENKO, Z.A.

COUNTRY OF INFO--USSR

SOURCE--SOLID STATE COMMUN. 1970, 8(7), 533-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PHONON, QUANTUM MECHANICS, ABSORPTION BAND SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1988   STEP NO--US/0000/70/008/007/0533/0536

CIRC ACCESSION NO--AP0112952
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0112952
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A QUANTUM MECH. THEORY IS
  PRESENTED OF OPTICAL ABSORPTION BY FREE CARRIERS IN AN ISOTROPIC BUT
  NONPARABOLIC ENERGY BAND. BOTH POLAR AND NONPOLAR SCATTERING BY PHONONS
  ARE CONSIDERED. THE RESULTS ARE COMPARED WITH PREVIOUS WORK.
  FACILITY: PHYS. INST., KIEV, USSR.

UNCLASSIFIED

1/2   035   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--ANALYSIS OF THE ISOTOPIC COMPOSITION OF SOME COMPOUNDS USING
    INFRARED ABSORPTION SPECTRA -U-
AUTHOR-(02)-VASILYEVA, L.N., DEMIDENKOVA, I.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12 (2), 290-4

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--IR ABSORPTION SPECTRUM, ISOTOPE, IR SPECTROSCOPY,
    SPECTROPHOTOMETER, NITROGEN OXIDE, METHANOL, BORON COMPOUND, CHLORINE
    COMPOUND, TOLUENE, PYRIDINE/(U)IKS12 SPECTROPHOTOMETER, (U)IKS14
    SPECTROPHOTOMETER, (U)IKS22 SPECTROPHOTOMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0318   STEP NO--UR/0368/70/012/002/0290/0294

CIRC ACCESSION NO--AP0119305
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0119305
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   INFRARED SPECTROSCOPY WAS USED TO
  DET.   IMPURITIES IN COMPDS. CONTG. D, PRIME10 B, PRIME15 N, AND PRIME18
  O.   SPECTRA WERE RECORDED WITH IKS-12, IKS-14, AND IKS-22
  SPECTROPHOTOMETERS.   FOUR DIFFERENT METHODS WERE USED.   THE 1ST, BASED
  ON THE COMPENSATION SPECTRUM OF THE INVESTIGATED COMPD. AGAINST A REF.
  COMPD. WITH NATURAL CONTENT OF ISOTOPES, WAS USED TO DET. PRIME15 N SUB2
  O AND PRIME14 N SUB2 O IN PRIME15 N, MEOH IN MEOD, AND PRIME11 BCL SUB3
  IN PRIME10 BCL SUB3.   THE 2ND METHOD BASED ON PREPN. OF CALIBRATION
  CURVES IN THE COORDINATES OF ABSORBANCE VS. CONCN. FOR STD. SMAPLES OF
  INVESTIGATED COMPDS. AND PURE REF. COMPDS. OR SAMPLES WITH KNOWN AMT. OF
  IMPURITY ADDED WAS USED TO DET. RHO, NITROTOLUENE AND OMICRON,
  NITROTOLUENE, O IN RHO, NITROTOLUENE,O SUB1 AND PYRIDINE, PYRIDINE, 2,
  O, AND PYRIDINE, 3, O IN PYRIDINE, 4, O.   THE THIRD METHOD, BASED ON
  ADDN.   OF INTERNAL STD., WAS APPLIED TO DETN. OF SERINE IN SERINE, O
  SUB1.   THE LAST METHOD DEALT WITH COMPDS. OBTAINED BY ION EXCHANGE
  METHODS AND WAS USED FOR DETN. OF H IN ND SUB3 AND H IN C SUB6 O SUB6.
  THE DETAILED DATA CONCERNING CONCNS., CUVETTES, SOLNS., SPECTRUM RANGE,
  ETC. ARE GIVEN IN A TABLE.

UNCLASSIFIED

USSR

GROSHEV, L. V.; DEMIDOV, A. M.; SOKOLOVSKIY, L.L. (Kurchatov Institute of
Atomic Energy)

"The De-Excitation of Even-Odd Nuclei over the Range $91 \leq N \leq 113$ after Capturing
Thermal Neutrons"

Moscow, Yadernaya Fizika; September, 1972; pp 441-6

ABSTRACT: The peculiarities of the decay of a capturing state for even-odd
deformed nuclei with the number of neutrons from 91 up to 113 are discussed.
The effect of the characteristics of the Nilsson orbit of the final state as
well as the "particlicity" or "holicity" of this state on the probability of
El-transition from a capturing state is noted. The maxima of the integral
intensity of the high-energy part of the spectrum were found for atomic weights
near 165 and 185.

    The article includes three tables: "Probabilities of El-Transitions from
the Initial State for Nuclei with $91 \leq N \leq 113$"; "Ratio of Probabilities of
Transitions to Various Nilsson States"; and "Ratio of Probabilities of Tran-
sitions into the State $1/2^-$ to Transitions into the State $3/2^-$ within One
Rotational Band"; and a graph showing the dependence of the integral intensity
of the high-energy part of the spectrum, the full radiation width, and the
strength function of s-neutrons on the atomic weight. There are 24 bibliographic
references.
1/1

USSR   UDC: 539.144.3

GROSHEV, I. V., GOVOR, L. I., DEMIDOV, A. M., Institute of Atomic Energy
imeni I. V. Kurchatov

"De-excitation of Even-Odd Germanium Nuclei After Capture of Thermal
Neutrons"

Abstract: The paper presents the results of measurement of the gamma
spectra of radiation capture of thermal neutrons by germanium isotopes
with atomic numbers of 70, 72, 74, and 76. The measurements were done on
the IRT-M reactor at the Atomic Energy Institute imeni Kurchatov, using
artificial quartz and bismuth filters. AI-2048 and AI-4096 analyzers
were used. The results are tabulated and compared with data in the
literature. The energy-level diagrams of the four isotopes are given.
Three figures, five tables, bibliography of thirteen titles.

1/1

USSR

GROSHEV, L. V., GOVOR, L. I., DEMIDOV, A. M., and RAKHIMOV, A. S., Institute of Atomic Energy imeni I. V. Kurchatov

"Spectra of Gamma-Rays and Schematics of Xe^{130} and Xe^{132} Levels from the Reaction (n, γ)"

Abstract: Using a spectrometer with a Ge(Li)-detector, the authors measure gamma rays arising during the capture of heated neutrons in a natural mixture of xenon isotopes and a sample enriched with Xe^{129}. They determine the energies and intensities of the gamma lines extracted from the spectra. On the basis of the data obtained they compile schematics of the gamma transitions of even-even Xe^{130} and Xe^{132} nuclei to levels lying below approximately 4.5 MeV. Unlike previous spectrometers, the one described in this article permits detecting a greater number of intense gamma rays. Solid XeF_2 and $Xe^{129}F_2$ were used as the target. A table is given showing the isotopic composition of an Xe^{129} sample. Two schematics are included showing the gamma transitions of the Xe^{130} and Xe^{132} nuclei. In separate sections the authors describe these schematics in detail and discuss previous research in the same field. The article contains one table, two figures, and a bibliography of 12 titles.

1/1

- 89 -

USSR

GROSHEV, L. V., DEMIDOV, A. M., LEONOV, V. F., SOKOLOVSKIY, L. L., Institute of
Atomic Energy imeni I. V. Kurchatov

"γ-Ray Spectrum From (n, γ)-Reactions in Sm^{150} and Sm^{151} Samples"

Abstract: The γ-spectra for the radiation capture of thermal neutrons by Sm^{150}
nuclei and Sm^{151} radioactive nuclei were measured with a single-crystal Ge(Li)
gamma-spectrometer. It is noted that in elements with even Z in the range of
atomic weights from 90 to 200, isotopes with odd A as a rule have the greatest
thermal neutron capture cross section. The cross section of some of these isotopes
is so great that a purity of the sample greater than 99.99% is necessary to elimi-
nate the considerable contribution from these. Since there is great difficulty
in obtaining samples of such high purity in electromagnetic methods of isotope
separation, this study used the method of burning out admixture isotopes having
an anomalously high capture cross section for thermal neutrons to obtain isotopes
of the required purity. The necessary Sm^{149} purity was obtained by burning out

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USSR

Sm^{149} in an integral neutron flux, $2.2 \cdot 10^{20}$ neutron/cm^2. The following neutron binding energies were obtained: 5596 ± 1 kev in Sm^{151} and 8258 ± 1 kev in Sm^{152}, the two isotopes which make the greatest contribution to the gamma-spectrum. Diagrams of the gamma-transitions for Sm^{151} and Sm^{152} are given. It is noted that gamma-quanta release of Sm^{151} nuclei is of interest, since the nucleus is on the boundary of the transition region from spherical to elongated nuclei. It is then possible to compare the gamma-spectra of Sm^{151} and Sm^{153}, which have a number of neutrons equal to 89 and 91 respectively. This problem will be considered in detail by the authors after measurements of the gamma spectrum of Sm^{155}.

2/2

1/2   016   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--LEVEL SCHEMES FOR BARIUM 136 AND BARIUM 138 FROM N, GAMMA REACTIONS
-U-
AUTHOR-(04)-GROSHEV, L.V., DVORETSKIY, V.N., DEMIDOV, A.M., RAKHIMOV, A.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(4), 768-76

DATE PUBLISHED-------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--GAMMA SPECTRUM, BARIUM ISOTOPE, THERMAL NEUTRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/2029   STEP NO--UR/0048/70/034/004/0768/0776

CIRC ACCESSION NO--AP0138883
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0138883
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   A BA TARGET ENRICHED IN PRIME135
BA AND PRIME137 BA, WAS IRRADIATED WITH THERMAL N, AND GAMMA SPECTRA
WERE MEASURED WITH GE(LI) DETECTORS.   THE ENERGY AND RELATIVE INTENSITY
OF 74 GAMMA LINES FROM THE NATURAL MIXT., PRIME136 BA, AND PRIME138 BA
ARE TABULATED.   SCHEMES OF ENERGY LEVELS AND TRANSITIONS FOR BOTH
NUCLIDES ARE INTERPRETED AND SUMMARIZED IN DECAY SCHEMES.
FACILITY: INST. AT ENERG IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   031   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--THE DE-EXCITATION OF EVEN ODD NUCLEI NEAR THE MAGIC NUBMER N EQUALS
82 AFTER THERMAL NEUTRON CAPTURE -U-
AUTHOR-(04)-GROSHEV, L.V., DVORETSKIY, V.N., DEMIDOV, A.M., ALVASH, M.S.

COUNTRY OF INFO--USSR

SOURCE--LA-TR-69-29, FROM REPORT IAE-1780. 13P. DEP. CFSTI

DATE PUBLISHED-------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, MATERIALS

TOPIC TAGS--ISOTOPE, BARIUM, CERIUM, NEODYMIUM, NEUTRON CAPTURE,
SPECTROSCOPIC ANALYSIS, GAMMA IRRADIATION, THERMAL NEUTRON, LITHIUM,
GERMANIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0796   STEP NO--UR/0000/70/000/000/0013/0013

CIRC ACCESSION NO--AT0131390
--------------------------UNCLASSIFIED--------------------------

CIRC ACCESSION NO--AT0131390

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WITH AN EXTERNAL BEAM OF THERMAL
NEUTRONS, THE GAMMA RAY SPECTRA OF EVEN ODD NUCLEI OF BARIUM (PRIME135
BA, PRIME137 BA, PRIME139 BA) AND CERIUM (PRIME139 CE, PRIME141 CE,
PRIME143 CE) WERE MEASURED WITH THE HELP OF A SINGLE CRYSTAL GE(LI)
SPECTROMETER. THE SPECTRA OBTAINED TOGETHER WITH THE GAMMA RAY SPECTRA
OF ODD NEODYMIUM NUCLEI MADE IT POSSIBLE TO DISCOVER CERTAIN
REGULARITIES IN THE DE-EXCITATION OF EVEN ODD NUCLEI WITH NEUTRON
NUMBERS N EQUALS 79, 81, 83, AND 85, TESTIFYING TO DIRECT THERMAL
NEUTRON CAPTURE BY EVEN ODD NUCLEI IN THE NEIGHBORHOOD OF THE MAGIC
NUMBER N EQUALS 82.   FACILITY: AKADEMIYA NAUK SSSR, MOSCOW.
INSTITUT ATOMNOI ENERGII.

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TITLE--USE OF A GERMANIUM DETECTOR FOR NEUTRON RADIATION ANALYSIS OF THE
   CONTENT OF ELEMENTS AND NEUTRONS -U-
AUTHOR-(03)-DEMIDOV, A.M., GOVOR, L.I., IVANOV, V.A.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPECIAL FEATURES AND ADVANTAGES OF
   ELEMENT AND ISOTOPE ANALYSIS WITH THE USE OF A GE(LI) DETECTOR ACCORDING
   TO THE GAMMA SPECTRA OF RADIATION CAPTURE OF THERMAL NEUTRONS IN
   SPECIMENS IS CONSIDERED.   THE RESULTS OF ANALYSES OF SOME GEOLOGICAL
   SAMPLES AND MATERIALS (DURAL, COPPER NICKEL ALLOY, SAND DAY MIXTURE,
   CALCITE, ZIRCONIUM, APATITE, MONACITE, SCHEELITE, GYSPSUM, ND AND BA
   ISOTOPES) CONDUCTED ON THE THERMAL NEUTRON BEAM FROM THE IRT-M REACTOR
   OF THE ATOMIC ENERGY INSTITUTE IMENI I. V. KURCHATOV, ARE PRESENTED AND
   DISCUSSED.

UNCLASSIFIED

INVESTIGATION OF THE SUPERCONDUCTING PROPERTIES
AND STRUCTURE OF TIN FILMS OBTAINED BY REACTIVE
SPUTTERING

V. M. Golyanov, A. P. Demidov, M. N. Mikheyeva, A. A. Teplov.

The critical temperatures T_c, transverse critical magnetic fields $H_c^{\perp}$ and resistivities of microcrystalline tin films obtained by reactive cathode sputtering are measured. The relation between T_c and $H_c^{\perp}$ and the structure of films as studied with an electron microscope is investigated. It is found that increase of T_c and $H_c^{\perp}$ correlates with a decrease of the grain size. The electron mean free path l is determined on basis of the resistance and magnetic measurements. The dependence of $H_c^{\perp}$ on l is compared with the theoretical calculation.

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DEMIDOV, A. S., GORLOV, V. B. and MOROZOVA, L. P.

"An Investigation of Stresses on Models of a Tube Sheet Made of Optically Active Material"

Translation: Experiments on the determination of stress in models of the tube sheet of a shell-and-tube heat exchanger of the rigid type made of the optically active material ED6-M are considered. Hydrostatic loading was imitated on the model using a lead shot layer placed in asbestos paper. The axial loading towards the sides of the tube packet is simulated by weights suspended from cams, made of the same ED6-M material and glued to the holes of the tube sheet. Corresponding to the concrete scheme of loading of the tube sheet, certain weights, suspended through blocks, simulate the force action of tubes of the opposite sign.

The values of the hydrostatic loading and the axial forces from the tubes are determined by calculating the concrete heat-exchanger, introducing the corresponding coefficients of force and geometric simulation. Calculations of 1/2

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'DEMIDOV, A. S., et al., Tr. Mosk. aviats. in-ta, Vyp 245, 1972, pp 5-13

tube sheet models with already known loading are conducted analogously. A
comparison of the stresses obtained by calculated and experimental means is
conducted. It is mentioned that the character of the calculated determination
of stresses from bending moment as a whole corresponds to the experimental
data; because of concentration the stresses near the apertures are maximal.
The stresses near the apertures exceed by 15-30% the mean experimental stresses.

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